CLAIMS:

1. (currently amended) A proportional rotary torquer comprising:

a stator having ~~two~~ plural permanent magnets; and

a rotor having a rotor core which ~~two~~ plural salient poles are formed at, and one or more rotor coils are wound around;

wherein an electric current is supplied to the rotor coils, so that a relative angle position of the rotor and the stator is displaced;

wherein the permanent magnet has two circumferential end portions and one circumferential center portion, and the radial thickness of the circumferential end portion is from 90% to 95% of the radial thickness of the circumferential center portion;

wherein the distance from the radial outline of the center portion of the salient pole to the rotation center of the rotor core is not more than 99% of the distance from the radial outline of the circumferential end portion of the salient pole to the rotation center of the rotor core; and

wherein the angle between the line connecting one of the circumferential outlines of the salient pole and the rotation center of the rotor core and the line connecting the other circumferential outline of the same salient pole and the rotation center of the rotor core is not less than 100 degrees.

2. (original) A proportional rotary torquer according to claim 1, wherein the proportional rotary torquer is structured such that:

the radial thickness of the permanent magnet at the circumferential end portions being smaller than the radial thickness of the permanent magnet at the circumferential center portion;

the distance from the radial outline of the center portion of the salient pole to the rotation center of the rotor core being smaller than the distance from the radial outline of the circumferential end portions of the salient pole to the rotation center of the rotor core; and

the angle between the line connecting one of circumferential outlines of the salient pole and the rotation center of the rotor core and the line connecting the other circumferential outline of the same salient pole and the rotation center of the rotor core

being an obtuse angle.

3. (original) A proportional rotary torquer according to claim 1, wherein the rotor core and the permanent magnet have facing surfaces facing each other, the facing surfaces of the rotor core and the permanent magnet formed in the shapes of the circular arc surfaces of which center positions are different from each other.

4. (original) A proportional rotary torquer according to claim 1, wherein the permanent magnet has a facing surface facing the rotor core, the facing surface formed in the shape of an elliptical surface.

5. (original) A proportional rotary torquer according to claim 1, wherein the permanent magnet has a facing surface facing the rotor core, the facing surface at the circumferential end portion formed in the shape of a flat-cut surface.

6. (original) A proportional rotary torquer according to claim 1, wherein the rotor core has two facing surfaces respectively facing the two permanent magnets, each of the facing surfaces of the rotor core formed in the shapes of a plurality of circular arc surfaces of which center positions are different from each other.

7. (original) A proportional rotary torquer according to claim 1, wherein the rotor core has two facing surfaces respectively facing the two permanent magnets, each of the facing surfaces formed in the shape of an elliptical surface.

8. (original) A proportional rotary torquer according to claim 1, wherein the rotor core has two facing surfaces respectively facing the two permanent magnets, the facing surface at the circumferential end portion of the salient pole formed in the shape of a flat-cut surface.

9. (original) A proportional rotary torquer according to claim 1, wherein the permanent magnet has two circumferential end portions, each of which has a non-magnetized region formed thereat.

10. (original) A proportional rotary torquer according to claim 1, wherein the proportional rotary torquer further comprises one or more elastic members generating

the torque at the magnitude proportional to the angular displacement of the rotor and in the direction opposite to the rotation direction of the rotor.

Respectfully submitted,

September 30, 2005
Date

Tadashi Horie (Reg. No. 40,437)

BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, IL 60610
(312) 321-4200